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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/605,671	10/16/2003	Monica M. Marugan	GEPL.P-077	2670

43247 7590 09/26/2006

Marina Larson & Associates LLC
re: lexan
PO BOX 4928
DILLON, CO 80435

EXAMINER	
ZIMMER, MARC S	
ART UNIT	**PAPER NUMBER**
1712	

DATE MAILED: 09/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/605,671
Filing Date: October 16, 2003
Appellant(s): MARUGAN ET AL.

Ryan Anderson (registration no. 51405)
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed June 26, 2006 appealing from the Office action mailed March 1, 2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal: there are no known related appeals or interferences.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct. No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. The changes are as follows:

(i) Claims 72-81, 83-89, 91-93, 102, 104-108, and 110-112 (previously claims 1-10, 12-18, 20-22, 31, 33-37, and 39-41) are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura et al., (U.S. 5,451,632) in view of Lo et al., (5,804,654) and/or Falcone et al., (U.S. Patent Application Publication No. 2002/0019466). Claim 78 is rejected over Okamura alone hence it follows that it is also rejected over Okamura in view of Lo and/or Falcone. Claim 79 recites the limitation that is rendered obvious by Lo and/or Falcone.

(ii) Claims 94, 97-99, 113, and 117 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura et al., (U.S. 5,451,632) in view of Brand, (U.S. 4,357,170) and/or Nelson et al., (U.S. 3,542,575).

(7) Claims Appendix

A substantially correct copy of appealed claims 72-118 appears on pages 13-18 of the Appendix to the appellant's brief. (Claims 119-132 are directed to allowable subject matter and are not to be reviewed on appeal.) The minor errors are as follows: original claim 9, now claim 80, had originally depended from claim 8 and, thus, claim 80 should have been recited as being dependent from claim 79.

(8) Evidence Relied Upon

Okamura et al., U.S. Patent # 5,451,632

Lo et al., U.S. Patent # 5,804,654

Falcone et al., U.S. Patent Application Publication No. 2002/0019466

Brand, U.S. Patent # 4,357,170

Nelson et al., U.S. Patent # 3,542,575

Hawley's Condensed Chemical Dictionary, 14th Edition

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 72-78, 83-88, 91-93, 100-107, and 110-112 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura et al., (U.S. 5,451,632).

Okumura discloses the preparation of a polycarbonate-polysiloxane copolymer and its combination with one or more of several materials to form a composition including an admixture of said copolymer and polycarbonate homopolymer, an admixture of said copolymer and a styrenic resin, an admixture of said copolymer and a fluororesin, an admixture of said copolymer and a pigment, etc. (column 9, lines 5-10. For instance, columns 9 and 10 teach a blend of the copolymer and polycarbonate homopolymer wherein 0.1 to 99.9 wt.% of the former are added to 99.9 to 0.1% of the latter. Column 12, lines 40-68 through column 13, lines 1-6 disclose mixtures of the

copolymer and a pigment of which titanium dioxide is preferred, wherein the pigment comprises preferably between 0.1 and 10% by weight of the total.

Relevant to the present discussion, the disclosure (column 15, lines 40-44) also provides for mixtures of the copolymer and any of the other embodiments of component (B) set forth therein (where component (B) is the materials delineated *supra*). Also germane to the Examiner's assertion of unpatentability, the reference repeatedly emphasizes the importance of having a specified content of the polydiorganosiloxane as a weight percentage of the entire composition. For instance, where the copolymer is combined with polycarbonate homopolymer, column 10, lines 44-56 state that the siloxane portion should comprise between 0.02 to 8 percent by weight of the total. See also column 12, lines 36-39 and column 14, lines 53-57 where minimum amounts are prescribed for each of the different combinations of copolymer and component (B).

Concerning Applicant's stipulation that the siloxane content should be at least 3% by weight, column 10, lines 49-56 state that mechanical properties and flame resistance are compromised when one deviates from this quantity as a percentage of the composition which, in one embodiment suggested by the reference, may comprise all of the materials outlined in the claims.

Concerning independent claim 31, the first thickness recited therein is arbitrary and can be any thickness whatsoever. Table 2C summarizes the physical attributes of sheets of 1/16" (approximately 1.6 mm) and 1/32" thickness that are made from compositions exemplary of the invention. Most of these demonstrate a flame resistance

of V-0 hence the article of claim 31 is rendered obvious for any first thickness below 1/16".

Concerning independent claim 48, the reference provides for an embodiment wherein the pigment is treated with a silicone oil for the purpose of enhancing dispersibility (column 12, lines 57-59). Accordingly, claims 15-16 and 34-35 are likewise rejected.

As for claim 7, the incorporation of fibril-forming tetrafluoroethylene is contemplated in column 14, lines 58-68 through column 15, lines 1-28.

As for claims 9, 12-14,17, 20-22, 36, 39-41, 53, and 56-58, auxillary flame retardants such as alkali metal salts of perfluorinated sulfonic acids and including potassium salt of perfluorobutanesulfonic acid are mentioned in column 16, lines 23-55.

Claims 72-81, 83-89, 91-93, 102, 104-108, and 110-112 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura et al., (U.S. 5,451,632) in view of Lo et al., (5,804,654) and/or Falcone et al., (U.S. Patent Application Publication No. 2002/0019466).

Okumura et al. is relevant for all the reasons mentioned *supra*. The reference does, not however, make even cursory mention of an anti-drip agent which, in the Examiner's estimation is surprising insofar as flame resistance is one of the primary characteristics targeted by the composition that represents their invention. Given that a flame-resistant polymer is sought, it seems evident that the polymer is to be used in environments where it potentially is subjected to fire/elevated temperatures. In view of

this, it is the Examiner's contention that the incorporation of an anti-drip agent would be an obvious modification of the prior art invention. In the absence of any indication as to what anti-drip additives are suitable, the skilled artisan would have consulted the related prior art to ascertain what materials are employed in this capacity.

There are documents numbering in the hundreds that contemplate using polytetrafluorethylene (PTFE) as an anti-drip agent. However, it is documented in Lo et al. and elsewhere that PTFE aggregates when blended into polycarbonate matrices thereby having a deleterious effect on the mechanical properties of the polymer. (The aggregates are actually referred to in *Lo* as "networks" in column 1, line 24.) To address this matter, Lo teaches the preparation of styrene-acrylonitrile-encapsulated PTFE (column 4, lines 20-22) that acquires the form of a free flowing polymer that, when blended into a thermoplastic, does not adversely affect the mechanical properties and, further, even provides an enhancement in flame-resistance (column 1, lines 32-39). Falcone (Example 1) indicates that the incorporation of these copolymers as anti-dip agents is now conventional. Accordingly, this aspect of the invention is obvious.

Claims 72-78, 83-88, 91-94, 97-99, 100-107, 110-113, and 117 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura et al., (U.S. 5,451,632) in view of Brand, (U.S. 4,357,170) and/or Nelson et al., (U.S. 3,542,575).

In column 12, line 58, Okamura contemplates using polyol as a dispersing aid for titanium oxide but does not volunteer any examples of the polyol. Nevertheless, it is well-established that trimethylolpropane is exemplary of the polyols employed for this

purpose as is illustrated by its mention in Brand (claim 11), Nelson (column 4, lines 29-34), and others.

(10) Response to Argument

Applicant traverses the Examiner's rejections of the aforementioned claims using various arguments. These will be addressed in the order presented in their brief.

Applicant first disputes the premise that Okumura reasonably suggests at all a three component composition, let alone one that adheres to the weight fraction limitations set out in the claims.

The Examiner believes, in fact, that there is fair suggestion of three-component compositions in a couple of sections of the Okamura document. At the outset, it should be pointed out that Okamura requires the polycarbonate-polysiloxane copolymer, labeled component (A) and denoted in shorthand notation in the reference as PC-PDMS, as an essential component. Columns 9-15 delineate different permutations of the component (B) with an indication in column 15, lines 40-44 that (A) may be used in concert with one or more of the various permutations of (B) of which there are about six general categories (polycarbonate homopolymer, filler, fluororesin, pigment, high impact polystyrene, and fibril-forming PTFE). Applicant places particular emphasis in their brief on the fact that, in the above-mentioned passage, the conjunction "or" is used which Applicant contends means that the different permutations of component (B) are only to be used in the alternative. The Examiner does not believe that "or" necessarily means in this case that only a single embodiment of (B) can be used. Rather, it is eminently

reasonable to suppose that the author of this publication had employed "or" in lieu of "and" merely to avoid suggesting that all of said resin, inorganic filler, and pigment must be used together. Indeed, column 11, lines 56-59 indicate that an inorganic filler and polycarbonate homopolymer may simultaneously be blended with the polycarbonate-polysiloxane copolymer. This teaching in combination with that at column 15, lines 40-44 would reasonably lead one to the deduction that various combinations of the different embodiments of (B) may be formulated together with (A).

Further, there are a finite number of three-component compositions that may be realized by combining the different categories of material identified *supra*. Of the pigments mentioned, of which there are only several, titanium dioxide is clearly favored (column 12, lines 47-48). Moreover, any of the polymers embraced by polycarbonate homopolymer would "read on" the polycarbonate resin recited by the claims. These facts taken together lead the Examiner to conclude that at least the combination of materials outlined in claim 1 is rendered obvious by *Okamura*. That the reference does not expressly disclose this combination of materials either in the body of the description or in the Examples is the reason why the claims have been rejected under 35 U.S.C. 103 instead of 35 U.S.C. 102.

As for the weight contributions stipulated in each of claim 72, 104, and 106, Okamura contemplates using 0.1 to 10 weight percent of the pigment in column 12, lines 66-67. The Examiner believes that this disclosure suggests Applicants recited range for the parameter with sufficient specificity. Concerning the weight contribution of the polysiloxane portion of the polycarbonate-polysiloxane copolymer, column 10, lines

40-55 clearly state that the polysiloxane content as a fraction of the total should be 0.01 to 10 weight percent. Again, the Examiner believes that the range required, at at least 3% by weight, is taught with sufficient specificity, if not anticipated (there being, after all, overlap over better than 50% of the range taught by the reference.) Subsequently, the reference instructs that mechanical strength, flame resistance, and heat resistance are all deleteriously affected if the amount of siloxane content as a fraction of the total weight of the composition, *which may include other materials*, is outside of the range advocated. Clearly, the skilled artisan will appreciate that the siloxane content is not to deviate from that amount disclosed in column 10, lines 40-55, which overlaps significantly with the amount claimed.

Applicant further contends that the reference fails to describe the organic coating applied to the titanium dioxide component. In this connection, the following is stated:

> Lastly, the organic coating of the TiO_2 is an important limitation to the present claims. *See* paragraph 42 of the specification. It is believed the fire retardant properties of the three-component mixture correlates with the distribution of the TiO_2 within the mixture. *Id.* TiO_2 pigments that do not have such a coating are believed to aggregate within the mixture. An organic coating, for example an organo-silicone coating, is required by the claims and is applied to the TiO_2 pigments to reduce their surface reactivity such that they are more easily dispersed within the mixture. *Id.* No mention in Okumura can be found of the organic coating as claimed.

The Examiner vehemently disagrees. Column 12, lines 57-59 plainly disclose the employment of dispersants to facilitate mixing of titanium dioxide in the host polymer matrix. In the non-final rejection mailed May 9, 2005, the Examiner reasoned that, for a dispersant to operate in the fashion intended, it necessarily must coat the surface of the

pigment, thereby modifying the pigment surface. Applicant later argued essentially that the Examiner's statement was unsubstantiated and based on conjecture after which the Examiner furnished a textbook definition of "dispersing agent" taken from *Hawley's Condensed Chemical Dictionary, 14th Edition*, which defined the term as a **surface-active** suspending medium.

Applicant further contends that the requirement (claim 73) that there be at least 50% of the polycarbonate is not obvious:

> As stated above there is no teaching in Okumura of the claimed three-component mixture nor the claimed three-component mixture in the amounts as required in claim 72 (previously claim 1). Claim 73 (previously claim 2) and therefore dependent claims 74-101 (previously claims 3-30) require that the bulk resin be at least 50% of the composition. This means that necessarily the amount of polycarbonate-siloxane copolymer is less than 50%. The PC-siloxane copolymer, used as a starting material for mixing with PC in the example section of Okumura, with the highest amount of siloxane is in example 2A (i.e. 3.8% PDMS). If this PC-siloxane copolymer were used in a composition containing 50% bulk resin and 50% copolymer, the amount of siloxane would be 1.9% which is outside the scope of the present claims.

Applicant is conveniently relying on select Examples taught by the reference to bolster their contention that the minimum siloxane content disclosed in claim 1 is not contemplated. However, in doing so, they ignore the broader teaching in column 10, lines 40-49 where it is stated that the siloxane content as a fraction of the total weight is 0.01 to 10 wt.%. "Disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments." *In re Susi*, 440 F.2d 442, 169 USPQ 423 (CCPA 1971). A reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill the art, including

nonpreferred embodiments. *Merck & Co. v. Biocraft Laboratories*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), *cert. denied*, 493 U.S. 975 (1989).

Turning to the article claims, claims 102 to 118, Applicant requires that the molding composition have a V-0 fire rating at a first thickness which, of course, is arbitrary. However, the manner in which Applicant defines a V-0 rating in Table 5, a table on which they rely heavily in their arguments, is quite peculiar. In particular, rather than formally report a fire rating associated with any of entries 13-21, they instead report a property labeled "p(FTP)" which , according to paragraph 57 of the Specification, is the *probability of a first time pass* in a UL94 test, a pass in the UL94 test ostensibly meaning that the article receives a V-0 rating. Insofar as none of the measurements reported were 1, this means that even those formulations that are said to adhere to Applicant's requirements, entries 13 and 20, did not pass the UL94 test every time. Additionally, several of the other entries that are considered to be comparative examples not according to the invention, entries 16 and 21 for instance, had p(FTP) readings closer to 1 than to zero which the Examiner takes to indicate that a rating of V-0 was achieved better than 50% of the time. *Finally, and most notably, entry 18 outlines a composition having .2(.16) = .032 or 3.2 wt.% of siloxane and 1 wt.% of titanium, both figures being within the limits of claims 104 and 106 yet this composition did not give a p(FTP) that Applicant would seem to regard as desirable, a p(FTP) of greater than 0.9 being sought!*

Applicant has not claimed was an article having a specified probability of passing the UL94 test in a first attempt. Certainly, Applicant cannot allege unexpected results due to inconsistencies between what is claimed and what is measured/reported and because there is an example provided that adheres to the limitations of both claims 104 and 106 and, yet, fails to provide a desirable result. In the absence of a proper showing of unexpected results, the article claims cannot be held as patentable because the reference fairly suggests compositions having all three components, and with prescribed amounts of 0.01 to 10 wt.% and 0.1 to 10 weight % of the siloxane component and the titanium dioxide pigment respectively. Accordingly, articles manufactured from at least some of the compositions embraced by the teachings of the reference are expected to inherently provide a V-0 rating at a first thickness because they are essentially equivalent in their chemical makeup. More to the point, they are expected to yield a p(FTP) measurement exceeding 0.9, which is really what Applicants aspired to achieve, *but did not actually claim*. "Products of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). See also *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established."

Finally, further concerning the matter of whether Applicant's results are unexpected, it is to be noted that Table 1B and 2B summarize the results of formulating together a polycarbonate homopolymer and a polycarbonate-polysiloxane copolymer with the result being in all cases that the combination exhibited a V-0 rating. (It is recognized that the homopolymer also contains bromine, an approach often used to impart flame retardance but comparative Example 1B shows that the bromine does not greatly improve the flame retardance as a V-2 rating was given in this trial.) Tables 1D and 2D summarize the results of numerous experiments wherein polycarbonate-polysiloxane copolymer and a pigment, usually titanium dioxide, were combined and these composition also had a flame resistance rating of V-0. Because each of the two-component compositions were given a V-0 rating, it is absolutely expected that, were all three materials to be combined, the resulting three-component composition would, likewise, provide a V-0 rating. Hence, any allegations of unexpected results would seem to be unfounded.

Of the *Lo* and *Falcone* references Applicant says only that they fail to address the perceived deficiencies of *Okamura*. Applicant does not comment on the rejections stated over *Okamura* in view of *Brand* and/or *Nelson*.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Marc S. Zimmer

Conferees:

Randy Gulakowski

Jennifer Michener